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Atty Docket: INT21246

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of	:	Assignee:
ROBINSON, Edgar C. et al	:	
	:	INTERNATIONAL THERMAL
	:	INVESTMENTS LTD.
	:	
Serial No.: 08/851,465	:	Art Unit: 3749
	:	
Filed: May 5, 1997	:	Examiner: Sarah SUERETH
	:	
For: MULTIFUEL INFRARED BURNER	:	
WITH ADJUSTABLE METERING	:	
VALVE	:	

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BRIEF OF APPELLANT

Honorable Commissioner for Patents  
P. O. Box 1450  
Alexandria, Virginia 22313-1450

Dear Sir:

This is an appeal from the rejection of the Examiner dated November 7, 2007 and February 22, 2007, twice and finally rejecting claims 1-8.

Real Party In Interest

The real party in interest is the applicant/assignee and appellant International Thermal Investments Ltd.

- 2 -

Related Appeals and Interferences

There are no other appeals and/or interferences presently known to or involving the appellant.

Status of Claims

The status of the claims is given in the Claims Appendix. The claims under appeal are finally and twice rejected claims 1-8.

Status of Amendments

There have been two final rejections in this case. The first final rejection was dated February 22, 2007 in which claims 1-8 were finally rejected. A minor and clerical non-substantive amendment was made to claim 1 in applicant's paper filed August 22, 2007 in which it was argued that claims 1-8 were patentable over the three principal references applied, namely Nutten et al United States Patent 3,428,406 in view of Patrick et al United States Patent 3,245,458 and Bennett United States Patent 4,061,463 as to claims 1, 2 and 4-8. Claim 3 was argued to be patentable over four(4) references cited, namely aforementioned Nutten et al, aforementioned Patrick et al and Bennett and further in view of Reichhelm United States Patent 3,361,183. The second final rejection was dated November 7, 2007.

Summary of Claimed Subject Matter

Claims 1-8 stand finally rejected. The claims are simply construed and cover an infrared burner which has been successfully constructed and sold. The infrared burner includes a burner tube utilising an air aspirated nozzle. A compressor supplies air to the nozzle and a fuel supply supplies fuel to the nozzle. A metering valve is interposed between the liquid fuel supply and the air aspirated nozzle nozzle which metering valve is adjustable to increase or decrease the fuel supplied to the nozzle. The fuel and the air are combusted within the burner

- 3 -

tube which has a perforated surface downstream of the nozzle.

Claim 1 reads as follows with reference numbers, the figures in which the reference numbers appear and the relevant portions of the specification being noted in brackets after each claimed element:

Claim 1 An infrared burner assembly [10-Figure 1; 700-Figure 14; Figure 11; Figure 9. See specification at pages 21, line 5-16; page 19, line 15 -page 20, line 15; 700-Figure 14] comprising a burner tube [110-Figure 14], an air aspirated nozzle [120-Figure 14], a compressor [134-Figure 14] to provide air under pressure to said air aspirated nozzle [120-Figure 14], a fuel supply [114-Figure 14] to supply liquid fuel at ambient pressure to said air aspirated nozzle [120-Figure 14], said liquid fuel being introduced to said air aspirated nozzle [120-Figure 14] in liquid form, a metering valve [113-Figure 14] interposed between said liquid fuel supply [114-Figure 14] and said air aspirated nozzle [120-Figure 14], said metering valve [113-Figure 14] being adjustable during operation of said burner assembly [700-Figure 14] to increase or decrease the liquid fuel supplied to said air aspirated nozzle [120-Figure 4] from said liquid fuel supply [114-Figure 14], said fuel and said air being mixed within said air aspirated nozzle [120-Figure 14] and being combusted substantially within said burner tube [710-Figure 14], said burner tube [710; Figure 14] having a perforated outer surface immediately adjacent to and downstream from said air aspirated nozzle [120-Figure 14].

Grounds of Rejection to be Reviewed on Appeal

The Examiner rejects independent claim 1 and dependent claims 2 and 4-8 under 35 U.S.C. 103(a) on the basis of Nutten et al United States Patent 3,428,406 in view of Patrick et al United States Patent 3,245,458 and Bennett United States Patent 4,061,463. The Examiner rejects claim 3 on the basis of Nutten et al United States Patent 3,428,406 in view of Patrick et al United States Patent 3,245,458 and Bennett United States Patent

- 4 -

4,061,463 and further in view of Reichhelm United States Patent 3,361,183. These rejections are to be reviewed upon appeal.

### Argument

1. The combination of Nutten et al, Patrick et al and Bennett do not teach or suggest the present invention as defined in claims 1-8

The Examiner rejects claims 1, 2 and 4-8 under 35 U.S.C. 103(a) as being unpatentable over Nutten et al United States Patent 3,428,406 in view of Patrick et al United States Patent 3,245,458 and Bennett United States Patent 4,061,463.

The Examiner and the applicant have reached agreement on the disclosure of Nutten et al insofar as the type of burner used by Nutten et al is not an infrared burner at all. That the Examiner agrees is clear at page 5, lines 4-5 of the February 22, 2007 action. Applicant further submits that Nutten et al do not teach or suggest an infrared burner where liquid fuel is drawn into the combustion chamber through an air aspirated nozzle which air creates the suction to draw in the liquid fuel. To be fair, it must be agreed that this is the case.

The Examiner cites Patrick et al which the Examiner states "...teaches a liquid fuel fired burner that is considered analogous art to both applicant's invention and to Nutten...". Applicant agrees Patrick shows and describes an infrared burner. However, applicant does not agree that Patrick et al show an infrared burner of the type taught by the present invention. Patrick et al teach two infrared burners. The first is a "gas fired infrared burner 396" (see col. 13, lines 19-20). In this embodiment, "...gas is supplied under pressure through an orifice spud 402 to the throat 403 of a venturi tube 404. The flowing gas induces all of the combustion air required for complete combustion into venturi 404 where it mixes with the combustion gas." (col. 13, lines 22-24). This disclosure does not assist Nutten et al in reaching the present invention which, as claim 1

- 5 -

recites, teaches "...a fuel supply to supply liquid fuel ...to said air aspirated nozzle...". In Patrick et al's first embodiment, as shown in Figure 6, gas is used and not liquid fuel.

Patrick et al's second embodiment, illustrated in Figure 7, is called a "Liquid fuel burner" (col 14, line 22). But Patrick et al's second embodiment differs substantially from the infrared burner of the present invention. Patrick et al relates that "...liquid fuel is forced under pressure from a pipe 502 through an atomizing nozzle 504 to provide a spray [of] atomized oil as shown by broken arrows 506. Nozzle 504 is located with the entrance bell 508a of a venturi tube 508 which has a throat 508b and oil sprayed through nozzle 504 therefore induces a flow of air through the venturi." (col. 14, lines 25-31)

Patrick et al's disclosure and drawing therefore teach liquid fuel under pressure at the atomising nozzle. When the oil passes through the nozzle, air is drawn into the nozzle. This is diagrammatically opposite to the teachings of the present application where fuel is received at the nozzle under ambient pressure and compressed air draws the fuel into the nozzle. And these limitations, of course, are recited in the claims under consideration.

The previous Examiner and the applicant traveled together down this road previously. See, for example, applicant's response filed February 14, 2000 and the remarks made in that paper. Suffice it to say, applicant's invention is not taught or suggested by Nutton et al or Patrick et al, taken individually or in combination.

The Examiner further relies on previously cited Bennett. Bennett was discussed in applicant's paper dated November 24, 2006 and the differences between Bennett and the present invention are set out there. Simply put, and as previously submitted, Bennett discusses pre-mix type infrared

- 6 -

burners only and does not teach or suggest an infrared burner which combusts an atomised fuel introduced to the nozzle at ambient pressure and drawn into the nozzle and the combustion chamber by air under pressure. At col. 1, lines 18-22, Bennett defines the infrared burner he contemplates thusly:

"The second category is the premix type of system in which a combustible mixture of air or other oxidizing gas is mixed with the fuel before reaching the burner and this mixture is pressurized and discharged from the burner where it ignites. Burners such as infrared burners are within the last category, as is the present invention." (emphasis added)

To summarize, Nutten et al do not teach an infrared burner as defined by the claims. Patrick et al teach fuel under pressure which draws air into the nozzle, precisely the opposite teachings of the present invention. And Bennett teaches only a type of infrared burner where the fuel and air are premixed which is not the infrared burner of the present invention.

The claims of the present application define a burner with unique advantages. The Examiner has furthermore failed to show that the three references define an operable combination similar to the present invention. Indeed, it is clear that no such operable arrangement is possible with the references cited.

This is not a rejection under 35 U.S.C. 102 where the combination of claimed elements all appear in a single reference. This is a rejection under 35 U.S.C. 103 where the Examiner has picked one or two claimed elements from a plurality of references and says the invention is obvious. This of course is a permissible practise if, as the case law makes clear, the chosen references, individually or collectively, teach or suggest the claimed combination. It is abundantly clear that no such teaching or suggestion is present in any of the three(3) references cited.

- 7 -

For these reasons, claims 1, 2 and 4-8 define a patentable advance and the three(3) references cited by the Examiner do not teach the patentable advance as defined by the claims under consideration.

The addition of the Reichhelm reference as applied to claim 3 likewise does not assist the deficiencies of the three(3) references cited against claim 3. The Examiner rejects claim 3 under 35 U.S.C. 103(a) as being unpatentable on the basis of Nutton et al in view of Patrick et al and Bennett and further in view of previously cited Reichhelm United States Patent 3,361,183.

The Reichhelm reference was thoroughly discussed in, for example, applicant's paper dated March 19, 2006 and was withdrawn by the Examiner thereafter but now reapplied. Reichhelm teaches a liquid fuel control valve and an air supply valve. Reichhelm does not teach a single valve for adjusting his fuel supply. He teaches two valves, one for liquid fuel and one for the air supply. Accordingly, the addition of Reichhelm would not teach an operable infrared burner assembly as defined by the present claims. For the same reasons, therefore, that claim 1 is deemed allowable, claim 3 is likewise deemed allowable.

The application under consideration describes and claims a unique and useful apparatus which is used with some considerable success in various commercial and military applications. The prior art does not teach or suggest the combination of components which has resulted in this beneficial heater.

#### Conclusion

Applicant submits that the Examiner has erred in rejecting the claims and that the rejection should be reversed and that claims 1-8 should be allowed.

- 8 -

Respectfully submitted,

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By:

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- 9 -

CLAIMS APPENDIXListing of the Claims

Claim 1 (previously presented)      An infrared burner assembly comprising a burner tube, an air aspirated nozzle, a compressor to provide air under pressure to said air aspirated nozzle, a fuel supply to supply liquid fuel at ambient pressure to said air aspirated nozzle, said liquid fuel being introduced to said air aspirated nozzle in liquid form, a metering valve interposed between said liquid fuel supply and said air aspirated nozzle, said metering valve being adjustable during operation of said burner assembly to increase or decrease the liquid fuel supplied to said air aspirated nozzle from said liquid fuel supply, said fuel and said air being mixed within said air aspirated nozzle and being combusted within said burner tube, said burner tube having a perforated outer surface immediately adjacent to and downstream from said air aspirated nozzle.

Claim 2 (previously presented)      An infrared burner assembly as in claim 1 and further comprising a regulator interposed between said metering valve and said fuel supply.

Claim 3 (previously presented)      An infrared burner assembly as in claim 2 wherein said metering valve is manually adjustable.

Claim 4 (previously presented)      An infrared burner assembly as in claim 3 wherein said regulator is a zero pressure regulator.

Claim 5 (previously presented)      An infrared burner assembly as in claim 4 wherein said fuel supply is a fuel tank.

Claim 6 (previously presented)      An infrared burner assembly as in claim 5 wherein said compressor is operatively connected to said fuel tank thereby to create a suction in said fuel tank.

- 10 -

Claim 7 (previously presented)      An infrared burner as in claim 6 and further comprising a valve interposed between said compressor and said fuel tank, said valve having a first and a second position, said first position allowing vacuum from said compressor to be applied to said fuel tank, said second position isolating said compressor from said fuel tank.

Claim 8 (previously presented)      An infrared burner as in claim 7 and further comprising a valve interposed between said metering valve and said nozzle, said valve having a first and a second position, said first position allowing fuel to pass to said air aspirated nozzle and said second position isolating said air aspirated nozzle from said fuel tank.

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- 11 -

CLAIMS BEING APPEALED

Claim 1. An infrared burner assembly comprising a burner tube, an air aspirated nozzle, a compressor to provide air under pressure to said air aspirated nozzle, a fuel supply to supply liquid fuel at ambient pressure to said air aspirated nozzle, said liquid fuel being introduced to said air aspirated nozzle in liquid form, a metering valve interposed between said liquid fuel supply and said air aspirated nozzle, said metering valve being adjustable during operation of said burner assembly to increase or decrease the liquid fuel supplied to said air aspirated nozzle from said liquid fuel supply, said fuel and said air being mixed within said air aspirated nozzle and being combusted within said burner tube, said burner tube having a perforated outer surface immediately adjacent to and downstream from said air aspirated nozzle.

Claim 2. An infrared burner assembly as in claim 1 and further comprising a regulator interposed between said metering valve and said fuel supply.

Claim 3. An infrared burner assembly as in claim 2 wherein said metering valve is manually adjustable.

Claim 4. An infrared burner assembly as in claim 3 wherein said regulator is a zero pressure regulator.

Claim 5. An infrared burner assembly as in claim 4 wherein said fuel supply is a fuel tank.

Claim 6. An infrared burner assembly as in claim 5 wherein said compressor is operatively connected to said fuel tank thereby to create a suction in said fuel tank.

Claim 7. An infrared burner as in claim 6 and further comprising a valve interposed between said compressor and said

- 12 -

fuel tank, said valve having a first and a second position, said first position allowing vacuum from said compressor to be applied to said fuel tank, said second position isolating said compressor from said fuel tank.

Claim 8. An infrared burner as in claim 7 and further comprising a valve interposed between said metering valve and said nozzle, said valve having a first and a second position, said first position allowing fuel to pass to said air aspirated nozzle and said second position isolating said air aspirated nozzle from said fuel tank.

- 13 -

EVIDENCE APPENDIX

Not Applicable

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- 14 -

RELATED PROCEEDINGS APPENDIX

There are no related proceedings under 37 CFR  
41.37(c) (1) (ii) .